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The capstone of the worldwide merger activities of the 1990s occurred within the first five weeks of 2000 with the announced $165 billion planned purchase of Time-Warner by America Online and the $183 billion takeover of Mannesmann by Vodaphone AirTouch. Three other mega-mergers brought the total volume of merger activity in the same five weeks to more than half a trillion dollars.[1] Although subsequent actions by European Union's Competition Commission whittled down the size of several of these mergers, their overall volume is still impressive.

Despite the reporting of particular mergers in the daily press, it is difficult to gain perspective on merger and acquisition (M&A) activities from such anecdotal evidence. And without a quantitative view of the dimensions of this process, we cannot begin to determine whether this merger movement will lead to a permanent change in the organization of industry.

This essay has two purposes: to present data hitherto unavailable for various important dimensions of the merger tsunami in both the United States and abroad during the final two decades of the twentieth century and to draw attention to some crucial implications of these activities for the world economy. In particular, I focus on the impact on enterprise size and on industrial concentration. Although increasing industrial concentration may not necessarily signify decreasing competition, it is certainly an important component.[2] The basic information came from a business database of mergers that has seldom been employed by economists and that allows an aggregate perspective.

The analysis is straightforward. The first section focuses briefly on the database from which the basic information on mergers and acquisitions for 1985 through 1999

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is drawn. The second section outlines some basic dimensions of the M&A boom both in the United States and abroad—the volume, average size, sectoral composition, and geographical distribution. The final section focuses on three issues: the short-run impact of such mergers on the changing size of enterprises; the short-run implications of such mergers on market competition, using data on the extent to which such mergers involve enterprises in the same four-digit industries; and the probability that these merged enterprises represent a permanent change in market structure.

The Database

The tables in this essay are calculated from a database of mergers and acquisitions that is maintained by Thompson Financial Securities Data (TFSD).[3] This commercial company collects information on publicly announced mergers and acquisitions in the world, using English and foreign language news sources, filings at the Securities and Exchange Commission (SEC) and its international counterparts, trade publications, proprietary surveys of investment banks, law firms, and other sources. The M&A data cover corporate transactions involving at least 5 percent of the ownership of a company where the transaction is valued at $1 million or more (after 1992, deals of any value are covered) or where the value of the transaction was undisclosed. Both public and private transactions are included.

From TFSD I purchased a listing of all M&A deals and their value as well as the names, standard industrial classification (SIC) codes, and nationality of the companies involved for 1985, 1992, and 1999. In addition, I obtained from them an aggregate time-series for the entire period from 1985 to the present.[4] Aside from straightforward mergers and acquisitions, transactions included in this database are purchases of large stakes, stock swaps, real estate investment trust (REIT) acquisitions, asset sales and divestitures, leveraged buyouts, tender offers, spinoffs and splitoffs, and so forth. These data do not, however, contain information on joint ventures, strategic alliances, or other such arrangements that may act to decrease competition (see Pryor 2001a) nor on profits resulting from such mergers.

Since I wished to focus on transactions with a primary impact on the industrial structure, I adjusted the data on individual deals to eliminate the following transactions: apparent duplicates and leveraged buyouts (LBOs), own stock purchases, and other deals in which the firm is listed as purchasing itself. In addition, I eliminated all transactions involving private and miscellaneous investors (SIC 6799), since most of these seemed to represent a change in ownership rather than the managing or merging of two different companies.

The database is not ideal. Although TFSD began collecting these data in the early 1980s, the company is reasonably confident of the completeness of the data only for the 1990s. This means that the data for 1985 should be considered as a sample, rather than the full universe. Moreover, for roughly half of the merger deals, the value of the

deal could not be determined, although it seems likely that these primarily involved smaller transactions and, as I show below, certain adjustments can be made to compensate for this problem. Finally, it is difficult to assess the accuracy of the information, especially the assigned SIC codes. Nevertheless, with suitable caution the data are usable for the purposes of this exposition.

Trends

Total Volume

The key question is the volume of mergers and their trend. Table 1 presents data for three years on the total volume of mergers and acquisitions, measured in terms of total number of mergers, total number of mergers with available data on the value of the deal, and total values of such mergers. I divided the mergers into four categories of transactions depending upon the nationality of the buying and the target companies.

Aside from the total recorded value of the deals, I also estimated the total value of all deals. This required an assumption about the ratio of the average value of the unrecorded deals to the average value of the recorded deals in the target industry. Since it is the smaller deals whose values are often not widely known, this ratio is a fraction of the value of the deals with reported dollar amounts. I have arbitrarily assumed that in each of fifteen different industrial sectors in each of the four different types of transactions (defined in terms of the nationality of the buyer and seller), the "critical ratio" of the value of the deals that are not announced is one sixth of the average value of the deals that are announced; in most cases these estimated values are close to the median size of merger. Obviously, this particular assumption can be challenged, but it turns out that the specific value chosen does not greatly affect the calculated trend in merger values. For instance, between 1992 and 1999 the total recorded value of deals grew at an annual rate of 35.7 percent. If the critical ratio is assumed to be 1/9, 1/6, or 1/3, the average annual growth rates in merger values in the same period were respectively 35.2, 35.1, and 34.6 percent. The total value of the deals is, of course, much more affected by such an assumption. More specifically, for the total deals in 1999, the estimated value would have been 5.5 percent lower or 16.4 percent higher if I had assumed the critical value to be respectively 1/9 or 1/3. Nevertheless, since I focused more on trends than on absolute values, this difference did not affect my major conclusions.

The estimated total volume of mergers and acquisitions rose at an average annual rate of 20.8 percent over the fourteen-year period from 1985 through 1999. By using aggregate annual data (that did not include the adjustments I made to the data) to interpolate between the benchmark years,[5] this trend can be seen most dramatically in chart

Table 1. Worldwide Mergers in Three Years Listed by Nationality of Buyers and Targets

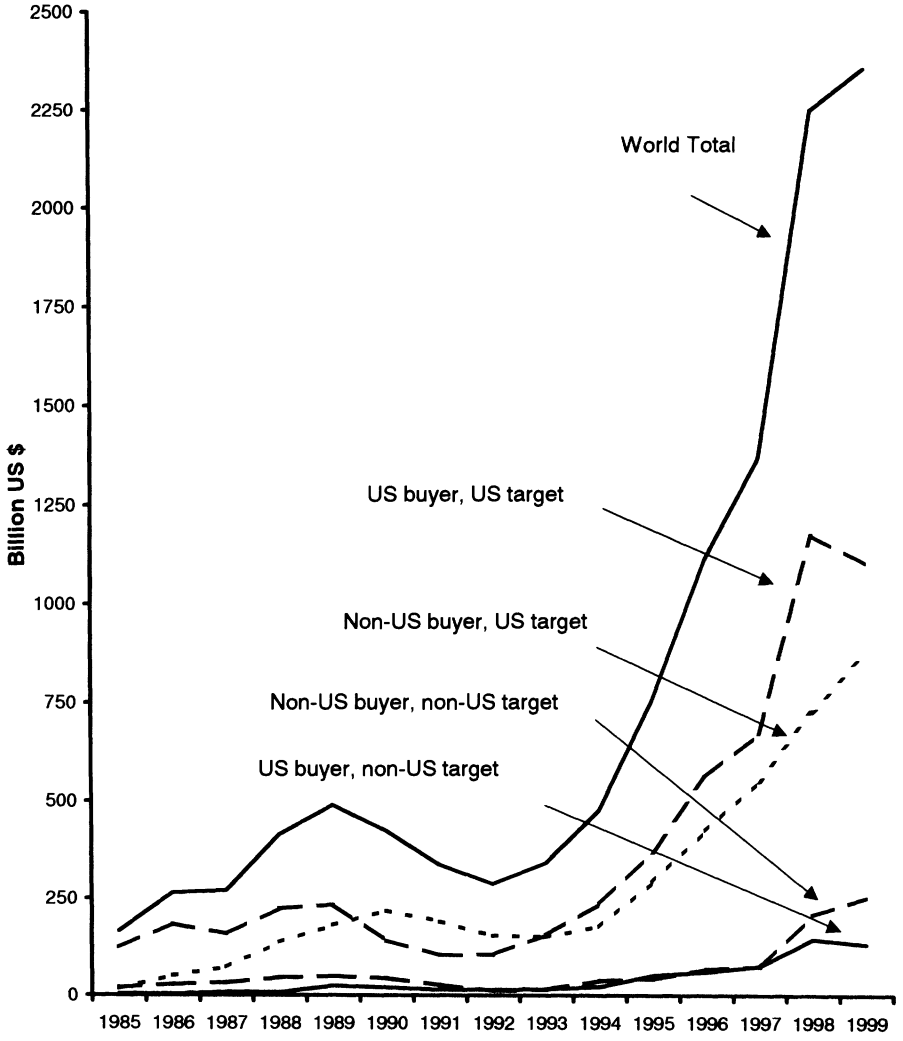
Buying companies: Target companies:	US US	US Non-US	Non-US US	Non-US Non-US	Total
Actual number of deals					
1985	1,378	89	197	259	1,923
1992	3,373	519	357	5,747	9,996
1999	6,801	1,380	970	10,795	19,946
Deals with data on the values of the transaction					
1985	690	18	100	151	959
1992	1,636	203	201	2,075	4,115
1999	2,961	528	531	4,540	8,560
Recorded value of deals (million$)					
1985	105,725	3,446	17,968	15,235	142,373
1992	89,960	12,184	10,792	118,807	231,742
1999	921,629	103,387	224,841	714,193	1,964,050
Estimated value of all deals (million$)					
1985	123,447	4,618	20,694	17,023	165,781
1992	104,884	15,109	12,340	154,057	286,391
1999	1,098,688	130,560	251,350	867,548	2,348,147

Note: The sources and adjustment of the data are described in the text. The estimated values of all deals are made by assuming that for the fifteen sectors for each of the four types of transactions, the average size of the transactions was equal to one sixth of the size of the recorded transactions of the target companies in the sector.

1. In interpreting such results, however, three upward biases of these data must be noted.

- Both prices and the total capital stock were increasing during the period. More specifically, the current dollar value of net private, non-residential, reproducible fixed private capital rose at an average annual rate of 5.1 percent over the period.[6]
- The ratio of the value of the merger deal to the actual value of the capital buildings and equipment involved also rose, given the billion dollar sales of dot.com shops with few tangible assets (and no profits) to established companies wishing to enter the Internet market. For instance, in the early months of 2000 Amazon.com, which had accumulated losses of more than $1.2

Chart 1. Estimated Value of Business Mergers



billion and had never posted an annual profit, had a market value almost two and a half times larger than that of the highly profitable FedEx Corporation (FDX Corporation), even while its sales were less than one tenth of the latter (What's an Old-Line CEO to Do? 2000). In more general terms, in recent years Tobin's *q* ratio rose to historic heights up to the end of the twentieth century (Tobin and

Sommers 2000) before tumbling in 2000. This, in turn, suggests that the data on merger values through 1999 was upwardly biased in terms of the replacement value of the underlying assets.

- As noted above, as the company gathering these statistics gained experience, it missed fewer mergers, especially those occurring outside the United States, than during the 1980s.

In 1999, total M&A activity involving US firms, either as a buyer or a seller, amounted to about $1.5 trillion. For comparison, the net stock of fixed reproducible non-residential tangible wealth of the private sector (excluding consumer durables) amounted to roughly $9.6 trillion in the same year.[7] Thus, the relative magnitudes of M&A activities were large, even given the upward biases of the data on the total value of deals. At least for the purchase of US firms by non-US enterprises, the process was fueled by the US deficit in its balance of payments.

The merger process has a peculiar inner momentum. For instance, the $76 billion merger of SmithKline Beecham and Glaxo Wellcome to form the world's largest pharmaceutical company in January 2000 was driven in part by Warner-Lambert's announcement several days earlier that it was talking merger plans with Pfizer, which would have, in turn, created the world's largest drug company (Sorkin and Peterson 2000). According to one stock analyst at that time, "In this era of merger mania, you don't want to be the last company without a partner." This suggests that the merger movement has had much of the inner dynamics of a middle-school dance.

Size of Transaction

For assessing the impact of mergers on industrial concentration, the size of the merger makes a considerable difference. If, for instance, small companies merge with each other, competition may be strengthened; if large companies merge with each other, the reverse may occur. The median and average sizes of the merger transactions provide an important clue about what is happening in this regard.

Such data have some pitfalls that deserve mention. We would certainly expect that the average size of merger transactions would vary considerably from year to year, depending on whether mega-deals occur. For 2000, for instance, the five mega-deals mentioned in the introduction certainly considerably raised the average value of mergers. As noted above, the absolute magnitudes of the average total deals were sensitive to the assumption about the relative size of recorded and non-recorded deals, even though the trends in these magnitudes were not greatly affected. Finally, in 1985, but not in later years, the merger data were truncated from below.

Table 2 presents the relevant data on median and average size of both recorded and total merger deals. As expected, the estimates jumped around a good deal. The medians declined slightly between 1985 and 1999, while the average size of both

recorded and total deals increased. The widening gap between average and median size of the deals reflects an increasing importance of the mega-deals that combine several very large companies.

Furthermore, the mergers in the individual one-digit industries increased even more than twice as fast in average size as the overall averages reported in table 2. For this estimate I weighted the average deal values in 1999 in one-digit industries by the number of merger deals in 1985 and, in another calculation, the average deal values in 1985 in one-digit industries by the number of 1999 deals. The average size of recorded deals increased somewhat more than twice as much as that reported in table 2, and the average size of total deals, about 2.5 times as much. This means, of course, that the number of mergers increased more in those one-digit industries where the average size deals were smaller than overall average.

Such results, combined with data presented below about the extent to which mergers have occurred in the same four-digit industries, reveal that in recent years merger activities have led to a considerable increase in industrial concentration.

Sector of Transaction

The results about average size of mergers when the relative number of deals is held constant mean that it is important to know in which sectors such a change in the

Table 2. Average Size of Merger Transaction

Buying companies: / Target companies:	US / US	US / Non-US	Non-US / US	Non-US / Non-US	Total
Median size of recorded deals (million$)					
1985	36.0	30.5	36.4	24.0	34.8
1992	8.7	14.0	8.4	9.7	9.4
1999	25.0	30.0	27.4	11.5	18.2
Average size of recorded deals (million$)					
1985	153.2	191.5	179.7	100.9	148.5
1992	55.0	60.0	53.7	57.3	56.3
1999	311.3	195.8	423.4	157.3	229.4
Average size of estimated deals (million$)					
1985	89.6	51.9	105.0	65.7	86.2
1992	31.1	29.1	34.6	26.8	28.7
1999	161.5	94.6	259.1	80.4	117.7

Note: For sources and methods, see footnote to table 1.

organization of industry is occurring. As shown in table 3, the sectoral distribution of mergers has considerably changed over time. For the merger targets, the share of purchases from the manufacturing and mining sectors has considerably decreased, while the purchases from the communications and the non-professional services sector have markedly increased. Of the buyers, the shares purchased by manufacturing and mining companies have considerably decreased, while the share of buyers from the communications field has greatly increased. In all other sectors, the share of total targets and buyers has been relatively small. The same generalizations also hold when mergers are measured in terms of actual recorded values or number of mergers. Moreover,

Table 3. Sector Composition of Total Estimated Value of Mergers

		Targets (%)			Buyers (%)		
		1985	1992	1999	1985	1992	1999
Agric., forest., fishing	0–999	0.1	0.6	0.2	0.0	0.3	0.0
Mining	1000–1499	11.3	4.7	6.6	13.8	3.6	6.3
Contracting	1500–1999	0.3	1.2	0.5	0.6	1.0	0.4
Manufacturing	2000–3999	49.5	40.5	28.6	50.6	39.5	32.6
Transportation	4000–4799	4.2	2.2	1.5	3.0	2.8	1.3
Communication	4800–4899	3.3	3.8	21.4	2.6	4.4	19.0
Public utilities	4900–4999	4.1	3.5	5.3	3.9	3.3	6.3
Wholesale trade	5000–5199	2.1	3.6	1.3	1.2	2.6	2.7
Retail trade	5200–5999	4.7	3.3	3.3	3.7	2.8	3.1
Financial	6000–6299	11.1	18.9	10.2	10.3	21.3	12.2
Insurance	6300–6499	2.1	5.8	4.7	3.9	5.9	4.8
Real estate	6500–6798	2.7	3.8	3.3	1.6	3.3	2.7
Services, non-profes.	7000–7999	2.9	5.7	10.4	2.3	5.7	7.2
Professional services	8000–8999	1.3	2.3	2.6	1.5	2.2	1.0
Government	9000–9999	0.0	0.0	0.1	0.4	0.7	0.1
Unknown		0.2	0.0	0.0	0.7	0.6	0.2
Total		100.0	100.0	100.0	100.0	100.0	100.0

Note: For sources and methods, see footnote to table1.

these generalizations also hold by and large for both the US-US and the non-US–non-US deals.

The sectoral distributions of US purchase of non-US firms was different from the general pattern because the deals were dominated by some large purchases in the mining and financial sectors in the mid 1980s. Purchases from the mining industry (which includes the petroleum industry) also played a large role in the purchase of US firms by non-US companies in the same period. This international consolidation of the mining sector, however, was played out by the late 1990s, when mining deals accounted for only a small percentage of total mergers. By way of contrast, in the late 1990s, consolidation in the banking sector had stepped up in the late 1990s and, for transborder mergers, the share of US purchases of non-US communication, utility, financial, and service enterprises increased dramatically.

Geographical Distribution of Buyers and Targets

Although table 1 shows a relative shift in the geographical distribution of merger activity from the US to foreign nations, it is useful to know whether such industrial concentration is occurring among industrial or developing nations. Table 4 presents more detailed data on the changing geographical distribution of targets and buyers.

Most noticeably, the shares of both buyers or sellers accounted for by the United States and Canada have noticeably decreased, while the share of mergers accounted for by other industrial nations in the Organisation for Economic Co-operation and Development (OECD) rose considerably. This means that the worldwide merger tsunami has become increasingly important among industrial competitors of the United States from other economically developed nations. Outside the OECD nations, merger activity appeared relatively unimportant. For instance, in 1999 when looking at either buyers or targets, the share of merger deals outside of the OECD accounted for less than 7 percent of the total. Although this share of non-OECD merger deals rose between 1985 and 1992, it fell back in 1999. Nevertheless, in absolute terms the mergers involving nations outside the OECD greatly increased both in terms of volume and number.

A Brief Summary

The data presented above provide quantitative evidence for the qualitative impressions gained from reading the financial press: No matter whether measured in terms of number or value, M&A activity has increased dramatically in the last fifteen years of the twentieth century, not just in the United States but in the rest of the world as well, especially in other OECD nations. The average size of mergers also increased dramatically, both in individual industries and for industry as a whole. The focus of

Table 4. The Geographical Distribution of the Recorded Value of Mergers

	Targets (%)			Buyers (%)		
	1985	1992	1999	1985	1992	1999
USA	79.2	44.1	52.2	88.3	43.5	58.4
UK	5.2	13.7	13.6	4.0	12.3	9.3
Canada	4.6	2.2	1.6	5.0	2.4	2.1
France	0.1	10.4	6.7	0.1	6.8	3.7
Germany	0.6	3.4	5.8	0.5	4.2	3.5
Italy	0.1	3.8	3.9	0.2	4.4	3.9
Japan	0.3	1.8	1.0	0.0	0.7	1.2
Other OECD	8.3	11.9	10.3	0.8	16.6	11.5
Rest of Europe	0.2	0.0	0.2	0.0	1.1	0.6
Middle East, Israel, Egypt	0.1	0.3	0.3	0.0	0.3	0.4
Rest of Africa	0.0	0.8	0.6	0.0	0.4	0.4
Rest Asia/Oceania	0.3	3.2	1.8	0.3	3.2	2.5
Rest of Americas	0.6	3.1	1.8	0.8	4.2	2.4
Other, unknown	0.5	1.3	0.2	0.0	0.0	0.1
Total	100.0	100.0	100.0	100.0	100.0	100.0

Note: For consistency over the time period, the East European nations in the OECD are included in "rest of Europe" and Mexico is included in "Rest of the Americas." For other notes and sources see footnote to table 1.

mergers has shifted from a predominance in manufacturing and mining to other sectors, particularly communications, financial, and services. In brief, the last decade and a half of the twentieth century has witnessed an important consolidation of the world capitalist system.

Some Important Economic Implications of the Worldwide Explosion of Mergers

Short-Run Impact on the Size of Firms

A change in the size of the firm has some important effects. Various studies have linked enterprise size to degree of innovative activity, technological change, work sat-

isfaction, absenteeism, wage inequalities (greater within large firms), and the receipt of government subsidies (because some firms are too large to be allowed to fail).

Nevertheless, increased merger activity does not necessarily mean that average firm size has increased. For instance, Lawrence J. White (1980) showed that between the 1950s and 1977, aggregate concentration in various industries reached a peak in the mid and late 1960s and then either tapered off (manufacturing, banking, or all non-financial corporations) or remained relatively constant. My own estimates for 1958 through 1992 (2001b) provided additional evidence on this point for all non-agricultural enterprises.[8] Obviously the relationships between M&A activity and various measures of aggregate concentration are not tight, because such activity can consist of firms buying other firms, while selling parts of their own firms at the same time.

Previous merger booms in the United States reveal cycles of roughly equal magnitude (measured in terms of number), with peaks around 1900, 1929, 1963, and the early 1980s (Golbe and White 1993). The US merger boom from 1985 to 2000 was, however, somewhat different: It followed very closely the boom in the early 1980s, its magnitude was much greater than previous booms in the past, and the simultaneous buying and selling of parts of firms did not appear so important.

As a result, enterprise size measured both in absolute and relative terms increased between 1992 and 1997. More specifically, a special tabulation of employment size of enterprises from the 1997 *Census of Enterprise* shows definite increases between 1992 and 1997 in average domestic employment of enterprises over nineteen workers, a Florence median, and the average number of employees in the largest 100 or 1,000 enterprises, as well as in terms of the percentage of employees in firms over of 100 or 1,000. Such results appear to reflect the impact of the merger boom of the 1990s (Pryor 2001b). If the foreign labor forces of US firms are included in the calculations, this conclusion of increasing enterprise size is reinforced. This result reflects, of course, the well-known tendency of large US firms to grow faster abroad than at home (Leonard 1976). In Europe, the situation was even more striking: since the early 1960s the employment size of large industrial firms has been steadily increasing up to the end of the twentieth century.

Short-Run Impact on Market Concentration

The extent to which firms are merging with other enterprises in the same or different industries can be readily determined by comparing the four-digit SIC codes of the buying and target firms. For such an exercise it is useful to distinguish the primary and the various secondary SIC codes, even though in many cases the determination of the primary SIC code raises some difficulties. The relevant data for such an analysis are contained in table 5.

Table 5. Share of Mergers within the Same Four-Digit SIC Industries

Buyer-target		Ranking of SIC codes: Primary-primary	Primary-secondary	Secondary-secondary	Total
Measured in terms of recorded value (%)					
US—US	1985	24.4	32.8	12.6	69.8
	1992	43.9	25.1	3.3	72.3
	1999	47.8	23.2	6.0	77.0
US—non-US	1985	84.3	3.5	0.0	87.7
	1992	23.0	33.7	20.4	77.1
	1999	43.3	29.5	2.5	75.3
Non-US–US	1985	42.9	32.5	2.0	77.4
	1992	19.6	16.8	3.7	40.2
	1999	57.3	15.0	4.6	76.9
Non-US–non-US	1985	37.7	12.7	4.8	55.2
	1992	40.5	14.6	5.1	60.2
	1999	34.0	33.3	4.7	72.0
Total	1985	29.6	29.9	10.1	69.7
	1992	39.9	19.8	5.1	64.9
	1999	43.7	26.2	5.2	75.1
Measured in terms of number of mergers with a recorded value (%)					
Total	1985	28.9	20.3	6.5	55.7
	1992	34.9	13.6	3.4	51.9
	1999	32.4	14.6	2.7	49.8
Measured in terms of total number of mergers (%)					
Total	1985	28.7	19.0	4.3	52.0
	1992	38.0	12.6	2.3	52.9
	1999	34.8	13.6	2.2	50.6

Note: For sources and methods, see footnote to Table 1.

The major conclusion can be concisely stated: In value terms, roughly two-thirds to three-fourths of all mergers with recorded deal values in the three benchmark years were within the same SIC industry. In 1999, 43.7 percent of mergers were between firms with the same primary SIC codes. Measured in terms of number, the share of mergers between firms with the same SIC codes was about half, which provides more evidence that the mergers involved large companies. In brief, horizontal mergers seemed to dominate M&A activity in the last fifteen years of the twentieth century. This is yet another way that the merger boom after 1985 was unique since in previous years; conglomerate or vertical mergers seemed to dominate. For instance, William N. Leonard (1976) showed that between 1960 and 1973, merger activity had no significant impact on market concentration.

The data in table 5 also provide several surprises. Contrary to expectations, horizontal mergers comprised a somewhat higher share of total mergers in the United States than abroad (the US-US mergers). I expected that because antitrust enforcement has been tougher in the United States than in most other countries, US companies would be more wary of such mergers. Moreover, firms in many non-US countries face a more regulated business environment, so that more specialized expertise in this regard is required of business managers. Thus, it might seem as though such cross-industrial mergers would be more risky outside the United States.

Several answers to this puzzle are possible. First, many of the horizontal mergers occurring in the United States are between firms in the same industry but in different markets, for instance, between banks dealing with geographically distinct markets, and such mergers are generally not subject to antitrust action. Second, because antitrust authorities have turned away from simple per se rules about ostensible market shares and are employing more sophisticated criteria—including international competitiveness—constraints on mergers arising from the possibility of antitrust action have been loosened. Third, US antitrust authorities have become more lax in their enforcement of current laws, in part because of budgetary constraints, in part because cross-border mergers are not considered worrisome. Finally, considerable deregulation has occurred abroad, especially among many OECD nations, so that the regulatory difficulties in cross-industry are much less severe than formerly.

Another surprise occurs because it would seem likely that horizontal mergers occurring across national lines would be in the same industry, reducing the risk of entering a new industry in a different nation. For non-US companies buying US firms, such an expectation is certainly met. Nevertheless, for US companies buying companies abroad, the share of such horizontal mergers is slightly below those of US firms buying other US firms. This puzzle is difficult to explain.

The increased industrial concentration that seems to be occurring as a result of these mergers is disturbing, because it suggests that market competition may decrease as well. Further, imports may serve as less of a competitive force in the US economy, either because the "foreign" enterprises exporting to the United States are owned by US firms or because industrial concentration among these non-US exporters is

greater. Further exploration of this issue would, unfortunately, take us too far afield from the focus of this brief essay.

Long-Run Impacts

An important aftermath of the conglomerate merger boom in the 1960s and 1970s in the United States was a divestment of many of these purchases as enterprises turned back to their core businesses ("back to basics"). Given that a large share of the M&As in the current merger boom are horizontal, the probability of future divestment seems less.

In many cases where the two merged firms are producing the same product, there may be no obvious way of splitting the firm, especially if the two parts were closely integrated. Indeed, in many cases the major purpose of the merger was to gain market share so that the managers would not want to divest part of the firm, holding the long-run hope that eventually the firm would be highly profitable. When divestment occurs in troubled horizontal mergers, the unrelated parts of the firm are often the first to be divested, not the core business. For instance, in the latter part of the 1990s Aetna Insurance bought a number of other insurance firms including U.S. Healthcare ($8.9 billion), New York Life, NYL-Care ($1.1 billion), and Prudential HealthCare ($1 billion). These mergers did not prove successful and, after turning down several offers of purchase, the company began in early 2000 to split the firm into two separate companies, one focusing on health care and the other on financial services.[9] In such a divestment, the increased market share of the mergers would be maintained.

Several long-term factors, however, seem likely to nullify some of the short-term anti-competitive aspects of the current merger boom:

- Many of the mergers were carried out quickly and for allegedly defensive purposes. As a result, a considerable number of these mergers may founder in the future. Indeed, some of these mergers were between enterprises with weak market positions because of the lack of new products, either at the time of the merger or in the pipeline. In such cases, it is doubtful whether increased size will solve these problems. For instance, among the world's eighteen largest pharmaceutical companies, eleven of the twelve companies which experienced mergers lost (combined) market share between 1990 and 1998, while all six of the companies which had not merged gained market share (New Alchemy 2000). Similar difficulties have appeared in other mergers.[10]
- To the extent that smaller firms are more innovative, the long-run market share of these giant firms may erode.

As I have shown elsewhere (2001a; 2002), concentration ratios in the United States fell from the early 1960s up to the early 1980s and then began to increase. In the

coming decade they seem likely to continue to increase further. Furthermore, even when concentration ratios are recalculated to add imports to total shipments in order to take crudely into account the impact of foreign competition, these trade-adjusted concentration ratios increased after the early 1980s. The merger boom seems to be the underlying cause.

The data provided above on the high degree of horizontal transatlantic mergers, not to mention horizontal mergers occurring where both enterprises are located abroad, provides support for the possibility that increased foreign trade may not provide the same competitive impulse that it provided in the past. For instance, it is not correct to argue that competition in the auto industry has increased because the import share is now larger than in the past, because the imports of Mercedes, Volvo, and Saab automobiles are now part of the product lines respectively of Chrysler, Ford, and GM. Recent purchases by US auto companies of large shares of Japanese auto makers (for instance, DaimlerChrysler's purchase of a controlling interest of Mitsubishi Motor Corporation) make this situation even worse.

In brief, if the world merger boom of the 1990s continues into the new millennium and if horizontal divestments do not increase in a spectacular manner, industrial concentration will increase in the United States, in other OECD nations, and in the world as a whole.

Notes

1. The other three mergers were SmithKline Beecham and Glaxo Wellcome ($76 billion), Pfizer and Warner-Lambert ($92 billion), and Warner Records (part of AOL-Time-Warner) with the music division of EMI ($20 billion).
2. These issues are explored in detail in Pryor 2001a.
3. More information about the company, the data, and how the data can be obtained are presented on the TFSD webpages: http://www.investext.com or, more generally, http://www.tfsd.com.
4. These aggregate series are roughly similar to the data from the company that are published in *Statistical Abstract of the United States, 1999*, table 891.
5. This series used for interpolation, provided by the TFSD, is roughly similar to that presented in *Statistical Abstract 1999*, table 891.
6. This is calculated from data drawn from tangible wealth estimates of the US Department of Commerce, Bureau of Economic Analysis (http://www.bea.doc.gov/bea/dn2.htm).
7. *Statistical Abstract of the United States, 1999*, table 774. The datum in the text represents an extrapolation from data from 1996 and 1997.
8. Leonard (1976) showed an increase in size from 1955 through 1974, but his data included foreign as well as domestic employment of large firms. Aspects of this issue receive attention below.
9. It is noteworthy that in 2000, Aetna-U.S. Healthcare was a target of takeovers by other insurance companies, who were offering a price for the entire company that was less than what Aetna paid for its acquired parts a few years before.
10. For instance, rail mergers have proven difficult and have resulted in freight delays and deterioration in other services. As a result of these problems, two years after their 1998 shared purchase of most of Conrail, the combined market valuation of CSX and Norfolk Southern

fell below the price that they had paid for Conrail. Despite such problems, in late 1999 Burlington Northern and Santa Fe Railway announced merger talks with the Canadian National Railway (which had been denationalized less than a decade before). Such actions led the CEO of the remaining large railroad in the United States, the Union Pacific, to declare: "Our customers think we're nuts to start a new round of mergers today" (DePalma 2000). The Surface Transportation Board evidently agreed and in March 2000 declared a fifteen-month moratorium on all railroad mergers.

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